

# EUROPEAN PATENT OFFICE

## Patent Abstracts of Japan

PUBLICATION NUMBER : 05319977  
 PUBLICATION DATE : 03-12-93

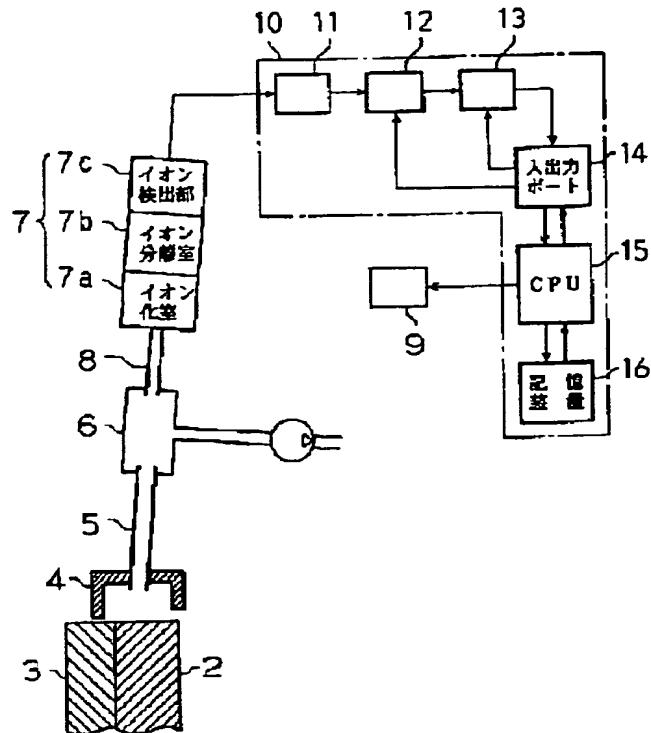
APPLICATION DATE : 19-05-92  
 APPLICATION NUMBER : 04151405

APPLICANT : KOMATSU DENSHI KINZOKU KK;

INVENTOR : YAMAMOTO KATSURA;

INT.CL. : C30B 15/10 G01N 27/62

TITLE : LIMITATION ASSESSMENT SYSTEM  
 FOR GRAPHITE CRUCIBLE AND  
 ASSESSMENT USING THE SAME



**ABSTRACT :** PURPOSE: To provide the assessment system so designed that because of decline in the quality of single crystal due to the contamination of a melt by heavy metal vapor generated from a graphite crucible with increased frequency of using the crucible during single crystal pull operation by the CZ process, the concentration of such heavy metal vapor is measured to enable assessing whether the crucible is to be exchanged.

**CONSTITUTION:** An enclosing element 4 to cover the joint between a graphite crucible 2 and a quartz crucible 3 and the upper edge of the graphite crucible 2 is provided in close proximity to the upper edge. In pulling up a single crystal, a heavy metal vapor generated from the graphite crucible 2 and accumulated in the enclosing element 4 is brought, via a gas drawing tube 5 and a differential exhaust device 6, into a mass spectrometer 7; and the measurements of the components and concentrations for the heavy metal vapor obtained by the mass spectrometer 7 are then compared with the corresponding permissible values through the CPU in a control unit 10. In case the above measurements exceed the corresponding permissible values, a signal lamp 9 gets on, saying that the graphite crucible 2 has come to a limitation.

COPYRIGHT: (C)1993,JPO&Japio